AWWA Water Loss Audit Level 1 Validation Document

VALIDATOR PROVIDED

AUDIT INFORMATION:

Utility: Goleta Water District

PWS ID: 4210004

System Type: Potable

Audit Period: Calendar 2019

Utility Representation: Betty Hall, Jennifer Burt, Shawn Dollar

Validation Date: 9/29/2020

Sufficient Supporting Documents Provided: Yes

VALIDATION FINDINGS & CONFIRMATION STATEMENT:

Key Audit Metrics:

Data Validity Score: 66

Data Validity Band (Level): Band III (51-70)

ILI: 1.16

Real Loss: 23.52 (gal/conn/day)

Apparent Loss: 6.00 (gal/conn/day)

Non-Revenue Water as Percent of Cost of Operating System: 1.3%

Certification Statement by Validator:

This water loss audit report has been Level 1 validated per the requirements of California Code of Regulations Title 23, Division 2, Chapter 7 and the California Water Code Section 10608.34.

All recommendations on volume derivation and Data Validity Grades were incorporated into the water audit. ☑

VALIDATOR INFORMATION:

Water Audit Validator: Tom Bunosky

Validator Qualifications: Water Audit Validator Certificate from the CA-NV AWWA Section, valid through May 22, 2021

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Water System Name: Goleta Water District

Water System ID Number: CA4210004

Water Audit Period: Calendar 2019

Water Audit & Water Loss Improvement Steps:

Steps taken in the preceding 3 years to increase the validity of data entered into the final audit:

- Information provided below is for the three-year period: 2017, 2018, and 2019.
- Devoted additional resources to the water loss control program by instituting a new, multifaceted position responsible for implementation of the Water Loss Control and Advanced Metering Infrastructure (AMI) programs, including planning for and implementation of water loss control strategies as well as collecting and evaluating data which might impact water loss.
- Worked with ID Modeling by auditing their process used to obtain the average system pressure in their hydraulic model and refined the HGL for system reservoirs to better represent actual system hydraulics in 2018.
- Participated in various modeling simulations to further calibrate the hydraulic model using flushing data, hydrant flow test data, PRV set points and SCADA data.
- Evaluated pressure data from fire hydrants across all pressure zones and multiple elevations within each zone throughout the distribution system. This average was then compared to the average system pressure of all nodes in hydraulic model assuming an average demand equal to the actual average demand of the audit year period. The averages using the two methods were consistent and within 2 psi (2.7%) of each other in CY 2018 and within 0.1 psi (0.1%) of each other in CY 2019.
- Utilized a meter to track actual water authorized discharge volumes during system-wide flushing program conducted in 2017, which accounted for 81% of the Unbilled Unmetered volume. Authorized discharge flushing volumes (Unbilled Unmetered) in prior years were calculated using formula (run time multiplied by rate of flow).
- Refined the length of mains by auditing the GIS data with respect to installation dates, pipe diameter, pipe type, facility status, ownership, and cross-checking the data to other internal sources.
- Tested and calibrated volume from own source meters to improve accuracy (well meters tested and calibrated in 2018 and 2019; CDMWTP Main meter calibrated semiannually in 2018; and CDMWTP Bypass meter tested in 2018 and 2019).
- Launched an improvement in 2019 to the methodology for meter accuracy testing for the CDMWTP Main meter representing the largest percentage of volume of water supplied from own sources – i.e. going from calibration of the measurement instrumentation to a pitot tube manometer method. However, results of the tests could not be certified due to difficulties in getting a repeatable pipe Interior Dimension at the location chosen.
- Upgraded well meters in 2017 and export meters in 2018 and 2019 with new electronic meters. With the replacement of import meters by a neighboring water agency in 2019, the majority of water supplied volumes are captured on new meters.

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- Utilized daily recorded system demands to apply and adjustment and further refine the volume from own sources amount, accounting for increases or decreases in system storage over a given audit year.
- Integrated reading of import and export meters from a manual, handwritten process to an electronic process within an industry-standard meter reading system.
- Utilized AMI data to verify volumes reported for water imported and exported are consistent with audit period.
- Completed inventory of all service lines by number and material type for lead and copper regulatory submittal.
- In-house District staff completed the AWWA Water Audit Certificate Program in 2018 and received a certificate from the CA-NV AWWA Section as a certified level 1 water audit validator.
- Staff participated in Technical Assistance Program workshops for level 1 water audit training and validation.
- Established a meter testing program and Standard Operating Procedures for small meters in 2018. Initiated in-house meter accuracy testing on a limited number of small meters over the last two years.
- Refined estimation process for Unauthorized Consumption in 2018 by utilizing internal logs of all reported unauthorized water use and developing criteria to estimate volume of unauthorized consumption that may have occurred but was not reported.

Steps taken in the preceding 3 years to reduce the volume of apparent losses:

- Information provided below is for the three-year period: 2017, 2018 and 2019.
- Expanded suite of reports generated out of the District's data warehouse to be used for follow-up by District staff to over 20 reports each month. Reports identify anomalies such as vacant or inactive accounts with usage; bill code variances; accounts missing readings; use on firelines; etc.
- Analyzed and utilized AMI data to audit monthly manual meter reading data on a monthly basis to identify potential errors in manual meter readings as well as comparisons to daily system demands on SCADA as a checks-and balances system.
- Implemented a data warehouse which enables the District to identify abnormal usage such as uncharacteristically high, low or zero use; flag and correct erroneous meter reads; and employ logic-driven skip read replacement.
- Reviewed source metering at CDMWTP and groundwater well sites for opportunities to maximize metering and accounting of flow.
- Initiated a well metering program to review and standardize the placement of meters installed at 9 well sites. Once complete, it will aid in better accounting of water to waste (e.g. discharge to storm drain) and more accurate estimates of Apparent Losses.
- Implemented a proactive customer meter volumetric accuracy test & replacement program based upon M6 methodology, which serves to both gather meter accuracy data and replace the oldest mechanical meters that experienced the most throughput with new electronic meters that capture lower flows at better accuracy throughout life of the meter.

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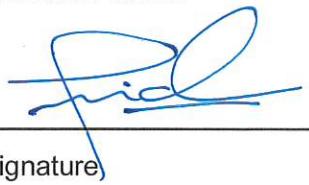
- Continued to stay abreast of new metering technologies and procured a variety of meter types to assess meter performance and diminish customer metering inaccuracies. Failed or aged mechanical meters subject to wear and tear are only replaced with electronic, no-moving-part meters.
- Implemented new Itron FCS meter reading system using iPhones and instituted a process to take photographs of all abnormal meter readings for follow-up investigation of anomalies by staff.

Steps taken in the preceding 3 years to reduce the volume of real losses:

- Information provided below is for the three-year period: 2017, 2018 and 2019.
- Added a new overview screen on SCADA to improve the ease at which changes or anomalies in the system are detected, thereby diminishing amount of leakage.
- Utilized Nest cameras to allow staff to view SCADA remotely to enhance system awareness.
- Implemented zone monitoring by metering distinct zones over the last three years.
- Heightened awareness of leakage including accelerated repair of leaks and breaks during the historic drought.
- Regular monitoring of AMI data by District staff to identify and notify customers of potential leaks early on (as opposed to waiting until the next monthly reading).
- Annually maintain pressure reducing valves to maintain constant pressures throughout the distribution system.
- Achieved a greater representation of the pressure profile by zone through a combination of SCADA, wireless TELOG devices, digital and paper pressure chart recorders. Improvements were made to the type of pressure monitoring devices used within various zones such as upgrades from wireless to SCADA, digital to wireless, adding additional devices within a single zone (i.e. SCADA on east and west ends of a single zone), or utilizing both SCADA and wireless monitoring within a single zone to achieve dual representation.

Water Loss Audit Certification Statement by Utility Executive:

This water loss audit report meets the requirements of California Code of Regulations Title 23, Division 2, Chapter 7 and the California Water Code Section 10608.34 and has been prepared in accordance with the methods prescribed therein.

FRANCIS CHAN	CFO
Executive Name	Executive Position
	10/1/2020
Signature	Date